Smart Panlee

PANLEE BC02

Features:

1. Based on Wireless-Tag's WT32-S3-WROVER-N16R8（16MB Flash/8Line 8M die inside）
2. 480*480 high-resolution RGB display with capacitive touch
3. 86box product appearance, convenient for embedding in smart home applications
4. Support online rapid prototyping on the 8MS development platform
5. Onboard RS485 chip

Core Materials (Tab. 0):

No.	Name	Model	Remark
1	ESP32-S3 module	WT32-S3-WROVER-N16R8	
2			
3			

Naming instructions ：

Specifications	illustrate	Remark
ZX3D95CE01S-TR	Contains temperature and humidity sensor and RS485, using on-board antenna	
ZX3D95CE01S-R	RS485 only, use onboard antenna	
ZX3D95CE01S-i-TR	Including temperature and humidity sensor and RS485, use IPEX external antenna	Batch to order
ZX3D95CE01S-i-R	RS485 only, use IPEX external antenna	Batch to order

Hardware Interface:

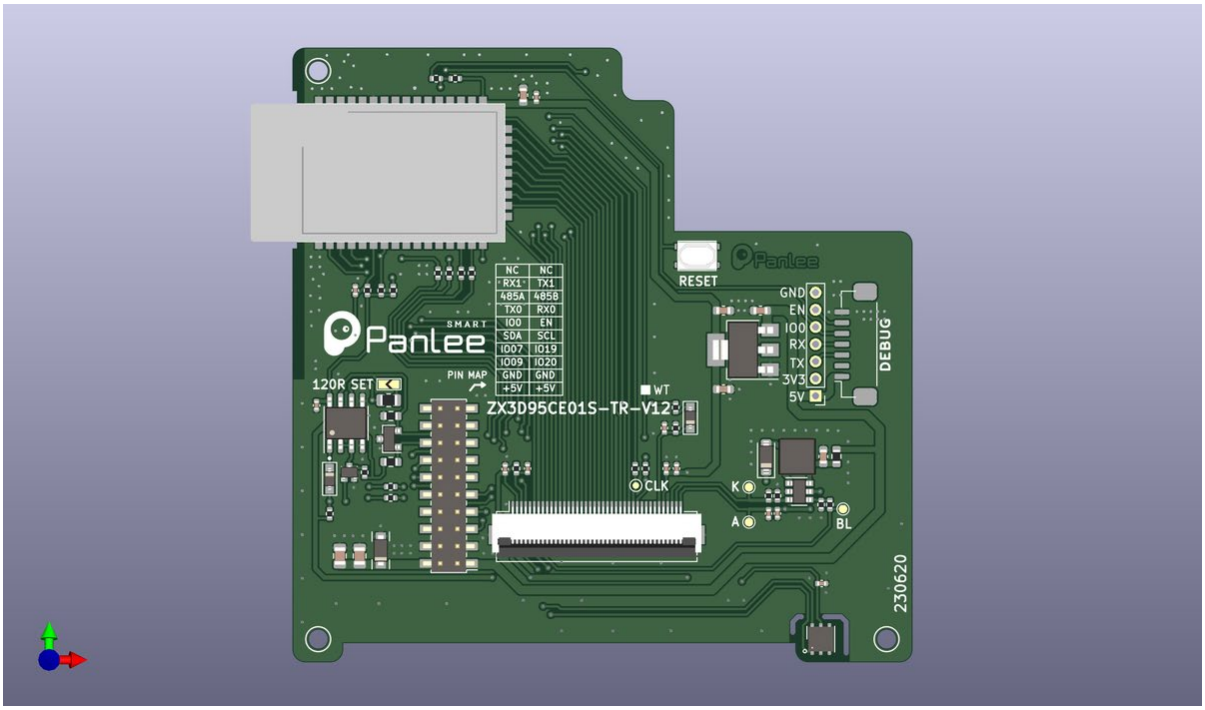


Fig.1 Hardware Interface

Interface Description:

[1] Debugging Interface(Tab.1)

Pin	Description	Module Pin	Voltage Range	Remark
1	+5V	-	5V	
2	+3.3V	-	3.3V	
3	TXD0	TXD0	3.3V TTL	Burning serial port
4	RXD0	RXD0	3.3V TTL	Burning serial port
5	EN	CHIP_PU	3.3V MAX	Chip reset
6	IO0	GPIO 0	3.3V TTL	Boot mode
7	GND			Selection Grounding

[2] Sub Board Interface (Tab.2)

Pin	Description	Module Pin	Voltage Range	Remark
1、2	+5V	-	+5V±5%	Board power supply
3、4	GND	-	0V	Grounding
5	EXT_IO2	GPIO 20	0~3.3V	Output interface 2
6	EXT_IO1	GPIO 9	0-3.3V	Output interface 1
7	EXT_IO3	GPIO 19	0-3.3V	Output interface 3
8	EXT_IO4	GPIO 7	0-3.3V	Output interface 4
9	IIC_SCL	GPIO 6	3.3V TTL	IIC bus clock, multiplexed with touch screen
10	IIC_SDA	GPIO 15	3.3V TTL	IIC bus data, multiplexed with touch screen
11	EN	EN	0~VCC	Chip enable
12	GPIO 0	GPIO 0	0~VCC	BOOT selection
13	RXD	RXD0	3.3V TTL	Download debugging serial port
14	TXD	TXD0	3.3V TTL	Download debugging serial port
15	485 B	-	RS485	485 bus negative, not available when output interface is used
16	485 A	-	RS485	485 bus positive, not available when output interface is used
17	TXD_EXT	GPIO 2	3.3V TTL	Multiplexed with 485 serial port
18	RXD_EXT	GPIO 1	3.3V TTL	Multiplexed with 485 serial port
19、20	NC	-	-	not connect

[3] Display Interface (Tab.3)

Description	Module Pin	Remark
TP_RST	-	Using RC reset
TP_SCL	GPIO 6	Touch IIC bus clock, multiplexed with external interface
TP_SDA	GPIO 15	Touch IIC bus data, multiplexed with external interface
TP_INT	GPIO 4	Touch interrupt
LCD_RST	-	LCD auto reset, use RGB_VS signal to keep working
LCD_CS	GPIO 38	LCD SPI bus CS
LCD_SCLK	GPIO 45	LCD SPI bus SCLK
LCD_MOSI	GPIO 48	LCD SPI bus MOSI
RGB_PCLK	GPIO 39	LCD RGB INTERFACE PCLK
RGB_DE	GPIO 40	LCD RGB INTERFACE DE
RGB_VS	GPIO 41	LCD RGB INTERFACE VS
RGB_HS	GPIO 42	LCD RGB INTERFACE HS
RGB_D0	GPIO 45	LCD RGB INTERFACE D0
RGB_D1	GPIO 48	LCD RGB INTERFACE D1
RGB_D2	GPIO 47	LCD RGB INTERFACE D2
RGB_D3	GPIO 0	LCD RGB INTERFACE D3
RGB_D4	GPIO 21	LCD RGB INTERFACE D4
RGB_D5	GPIO 14	LCD RGB INTERFACE D5
RGB_D6	GPIO 13	LCD RGB INTERFACE D6
RGB_D7	GPIO 12	LCD RGB INTERFACE D7
RGB_D8	GPIO 11	LCD RGB INTERFACE D8
RGB_D9	GPIO 16	LCD RGB INTERFACE D9
RGB_D10	GPIO 17	LCD RGB INTERFACE D10
RGB_D11	GPIO 18	LCD RGB INTERFACE D11

RGB_D12	GPIO 8	LCD RGB INTERFACE D12
RGB_D13	GPIO 3	LCD RGB INTERFACE D13
RGB_D14	GPIO 46	LCD RGB INTERFACE D14
RGB_D15	GPIO 10	LCD RGB INTERFACE D15
LCD_BL	GPIO 5	LCD backlight control, high level enable

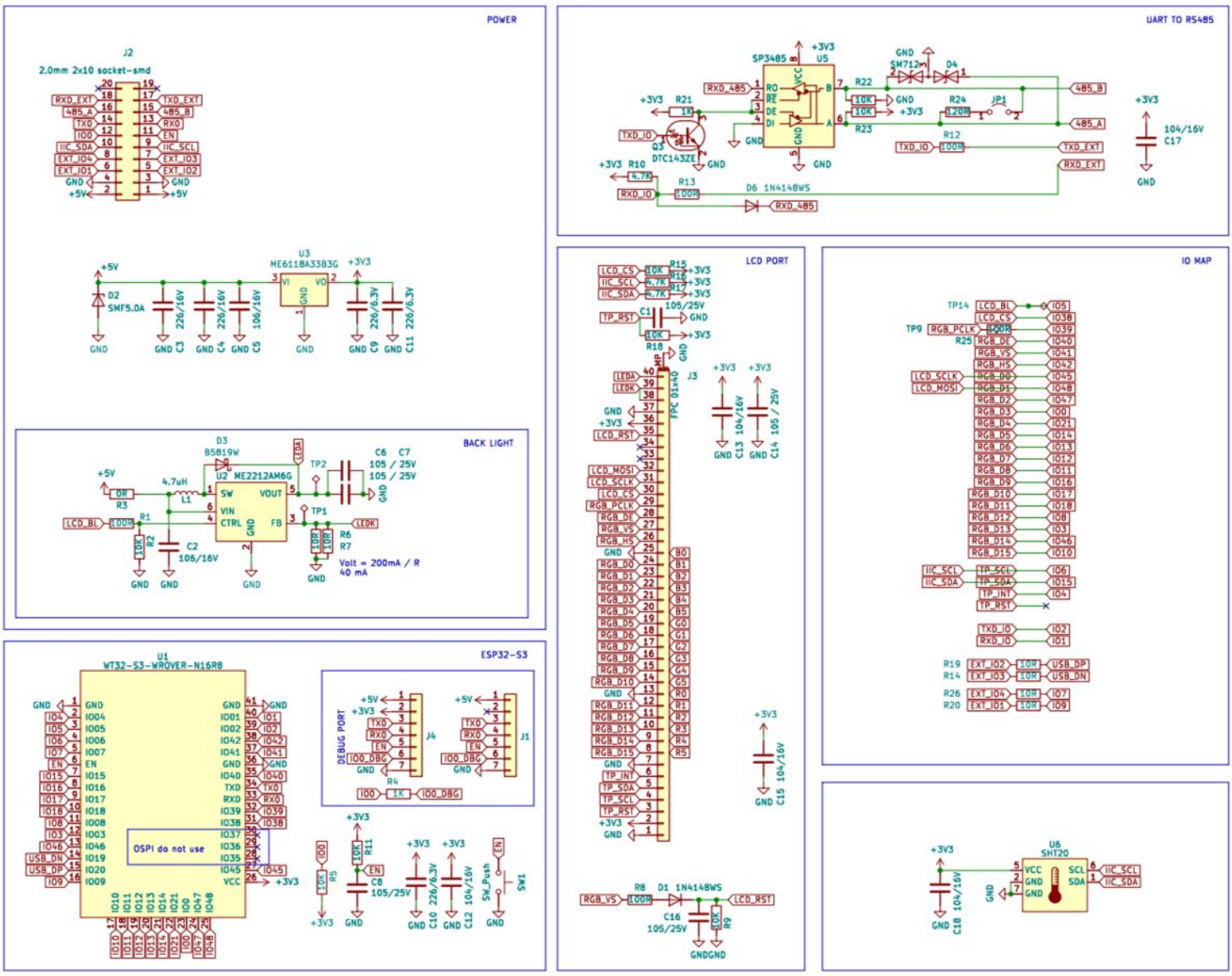
Interface Encapsulation (Tab.4):

Peripheral Name	Description
Debugging interface	Debugging interface MX1.25-7P
External interface	External interface 2.0mm 2x10P female header

Hardware peripherals：

Appearance Name	Description
SHT20	Temperature and humidity sensor, hanging on IIC bus
LCD	480*480 resolution, RGB565
RS485	Use automatic transceiver 485 circuit

Schematic:


POWER
UART TO RS485
LCD PORT
IO MAP
BACK LIGHT
ESP32-S3
DEBUG PORT
OSPI do not use

Specification Parameters:

[1]Electrity parameters(Tab.6)

	MIN.	Type	MAX.
Operating current (@5V)*	-	230mA	-
Operating voltage（USB）	4.8V	5.0V	5.2V
Operating temperature	-20°C	25°C	60°C
Storage temperature	-30°C	25°C	70°C
ESD protection voltage (contact)	-	8kV	-
ESD protection voltage (air)	-	12kV	-

Note:

*（*1）The operating current is 100%* of the LCM backlight brightness at 5V power *supply and ESP32-S 3 under normal operation*

*（*2&*3）ESD protection refers to the ESD verification of the whole machine (including the shell).*

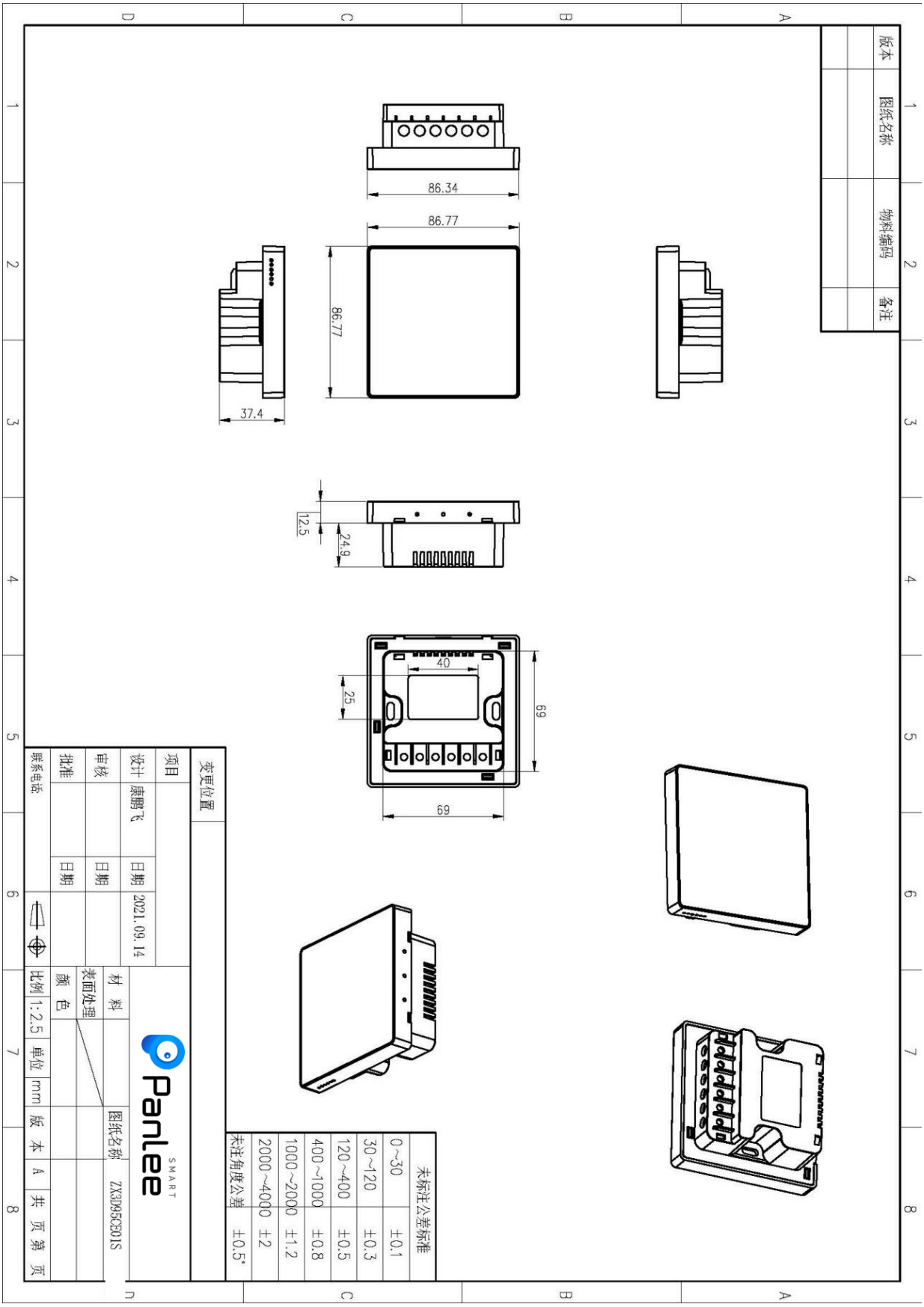
[2] Display Parameters (Tab.7)

LCD panel size	3.95inch
Display type	IPS
Drive IC model	GC9503V
Visual angle	FREE
Physical dimensions	84.00*84.00*3.13mm
Resolution	480(H)x3(RGB)x480(V)
Interface	RGB
Color	16.7M
Backlit mode	8 white LEDs in 4S2P
Backlight brightness	

[3] Touch Parameters (Tab.8)

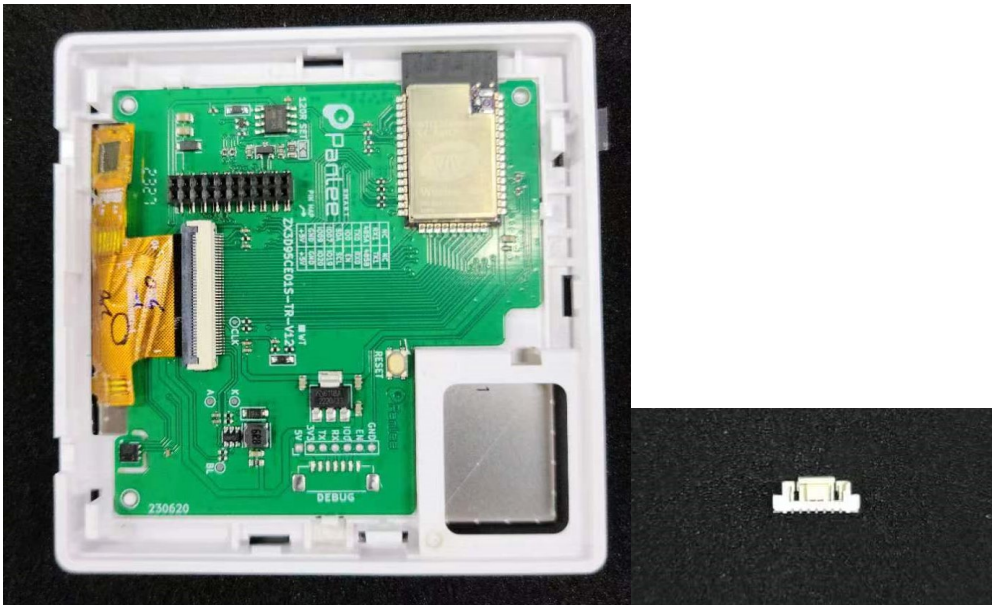
Touchscreen type	Capacitive touch
Drive IC model	FT6336U
Interface	I2C
Touchscreen structure	GF
Touch mode	Surface touch
Surface hardness	6H
Light transmittance	85%

Outline Dimensional Drawing (Fig.2)

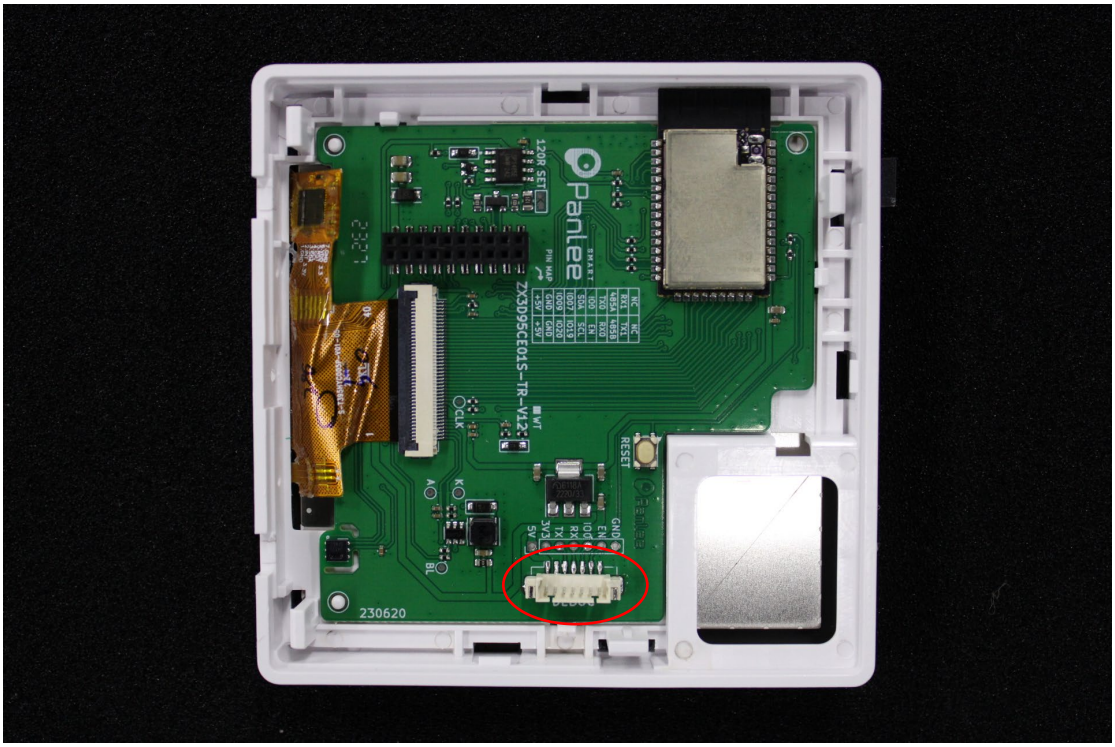


Operating Instructions：

1. Prepare the product body and accompanying items（step 1）



2. Solder the attachment to the Debug（step 2）



3. Please see the content below for burning details. （step 3）

Firmware Burning:

1. Connect the downloader (ZXACC-ESPDB) via a USB-Type C cable. And then connect the ZX3D95CE01S-TR board with the downloader (ZXACC-ESPDB) through an cable. As the downloader (ZXACC-ESPDB) has automatic data flow processing capabilities, the firmware can be downloaded automatically through the ESP32 Flash Download Tools.

Fig.3

2. As shown in Fig. 4: Select the firmware path at mark 1, and then fill in the burning address, usually 0X00. Note that this checkbox must be checked; Set the crystal frequency to be 40MHz at mark 2; Select 32Mbit for Flash size at mark 3; Select DIO for SPI MODE at mark 4; Select the COM port number recognized by the computer at mark 5; Select the baud rate at mark 6 (the higher the value is, the faster the firmware will be downloaded. Max. 1152000bps).
3. After the previous configuration, click START at mark 7 to start burning the firmware.

Complete the above steps, and then press the reset button on the back of the development board to start running the firmware you just burned.

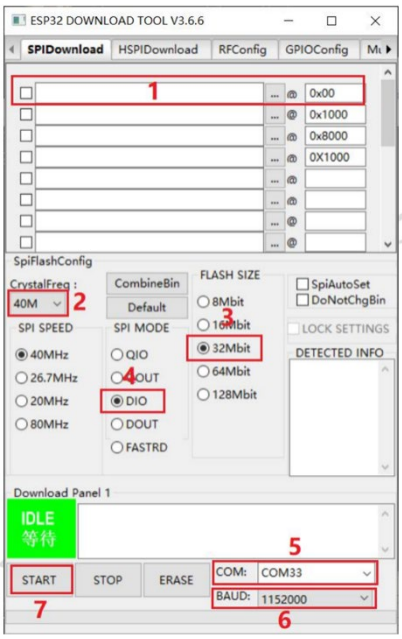
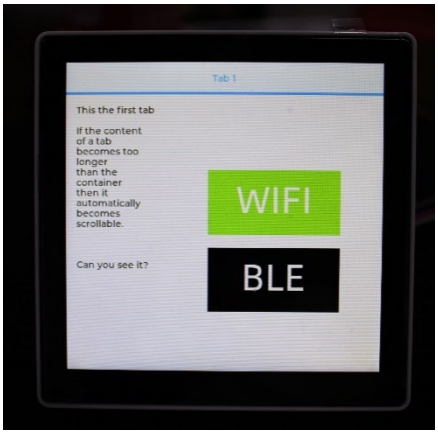


Fig.4

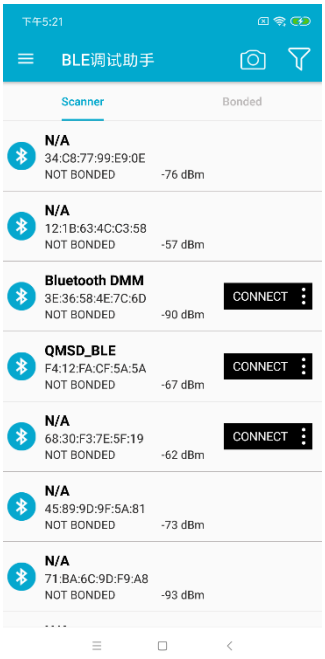
Bluetooth/Wifi module testing：

1. Prepare the firmware: target_v3.0.bin，Wifi please set up according to the following description: wifi name: linksys2.4G wifi password: 8888888888，The hardware will automatically recognize and connect to WIFI after you turn on the device and burn the firmware (Fig.5).

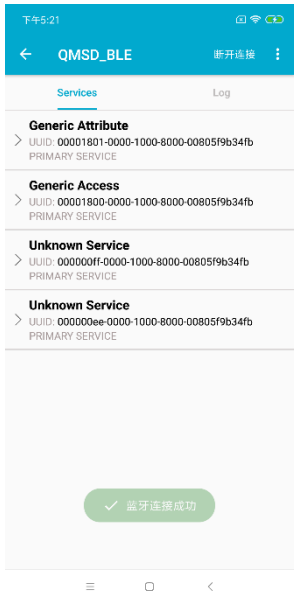


(Fig.5)

2. After successful WIFI connection, you can test the Bluetooth module, download and open "BLE 调试助手" in the application store, and find the Bluetooth name: QMSD_BLE, click connect to complete the connection (Fig.6)（Fig.7）.

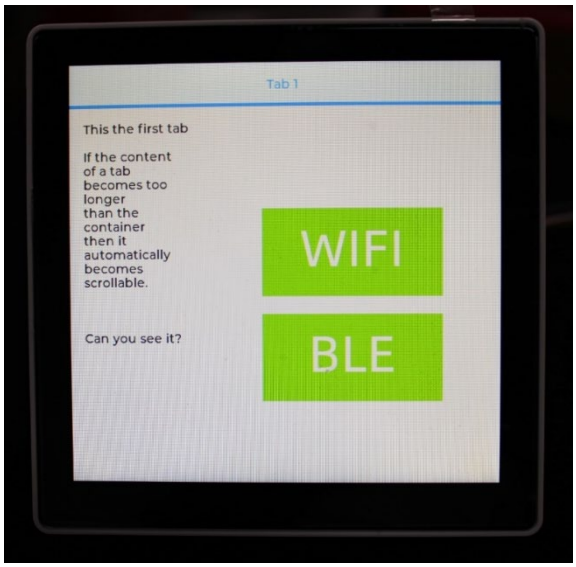


(Fig.6)



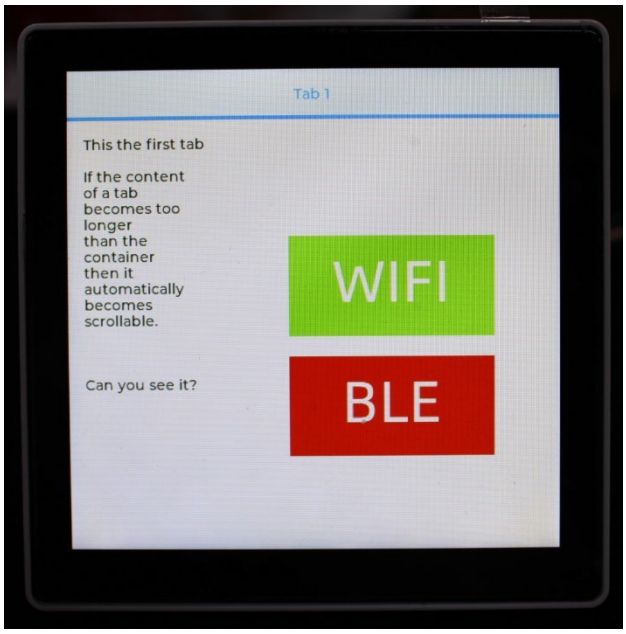
(Fig.7)

3. BLE highlights green to indicate a successful connection (Fig.8)



(Fig.8)

4. BLE highlights red to indicate a disconnected connection(Fig.9)



(Fig.9)

Online GUI Designer:

Users can use our online GUI designer platform, which is similar to MIT APP Inventor, to realize the rapid GUI development with building blocks. Currently, the platform has perfected the graphic interface development, and more driver code blocks will be further improved in the future.

Login Page: http://8ms.xyz/login
User Manual: https://doc.smartpanle.cn/ESP32-S3/index.html

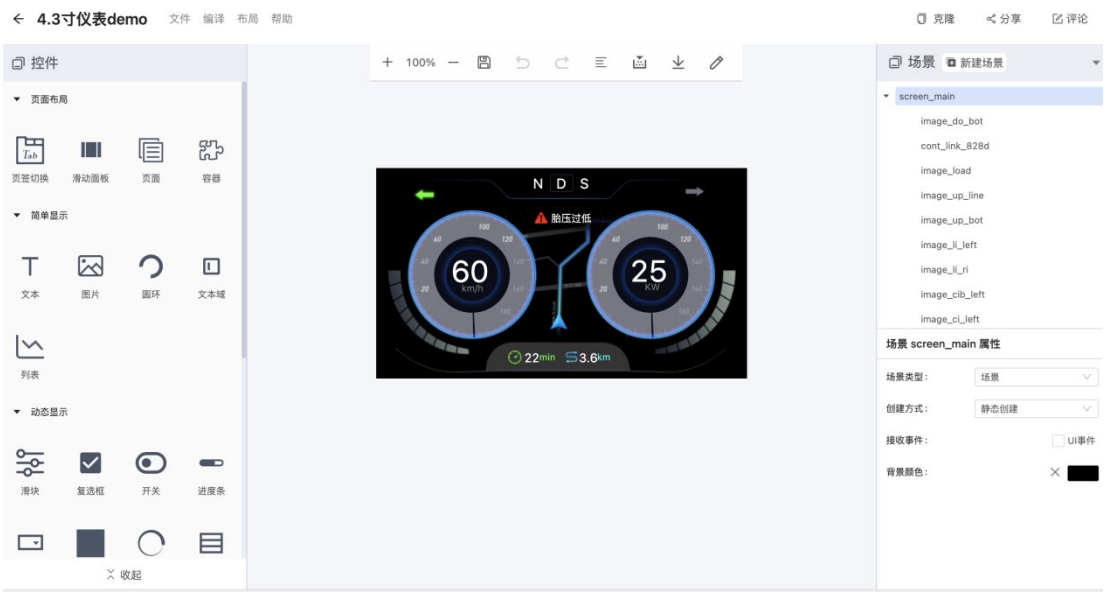


Fig.5

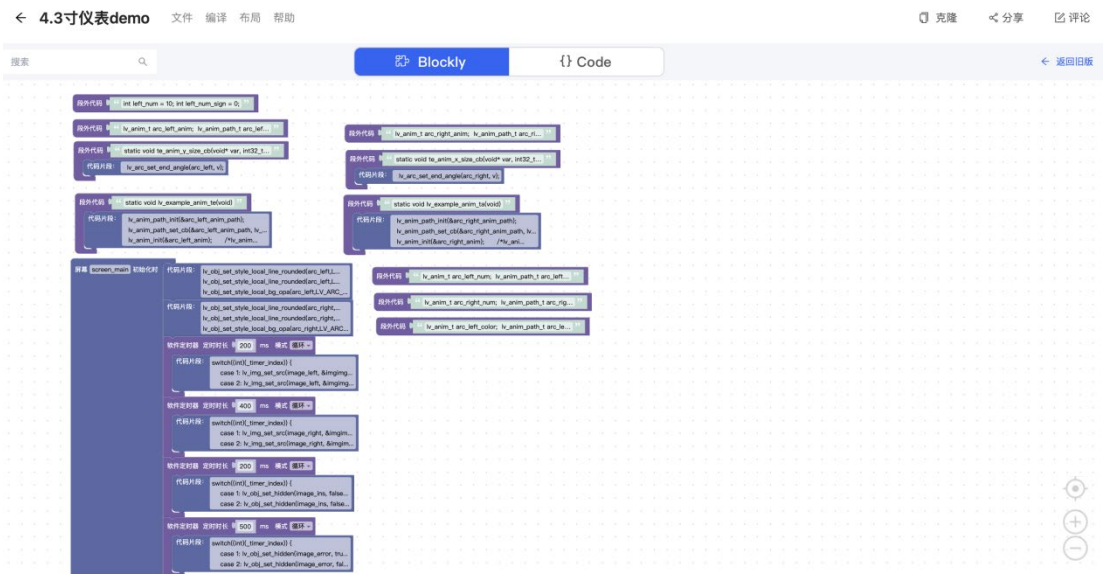


Fig.6

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC RF exposure statement:

The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance between 20cm the radiator your body.

Contact Us

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